



SAMPLES

A Sampling of NOAA Research People and Projects

SPRING 2000

Office of Oceanic and Atmospheric Research

VOLUME 1 NUMBER 2

Susan Solomon First NOAA Scientist Awarded National Medal of Science

Dr. Susan Solomon, a researcher at the Aeronomy Laboratory in Boulder, CO, is the first NOAA scientist to be awarded the nation's highest scientific honor — the National Medal of Science. Solomon received the medal during a White House ceremony March 14. She was honored by NOAA at a reception the following day.

Her insights in explaining the cause of the Antarctic ozone hole earned her the honor. Solomon performed key work theorizing that chemical reactions involving manmade chlorine could be responsible for the remarkable Antarctic ozone depletion. She also served as the leader of the National Ozone Expeditions to the Antarctic in 1986 and 1987, where she conducted observations that provided the first direct evidence of this chemistry. In 1994, an Antarctic glacier was named in her honor in recognition of that work.

"We are extremely proud of Susan Solomon, especially since she is part of NOAA Research. She is an excellent example of how NOAA Research Scientists work on basic problems of critical importance to society," said David L. Evans, Assistant Administrator for NOAA Research.

In January, Solomon received the Carl-Gustaf Rossby Research Medal, the highest award given by the American Meteorological Society, for her work on the ozone hole.

The National Medal of Science was established by the 86th Congress in 1959 as a presidential award to be given to individuals "deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical or engineering sciences." A committee of 12 scientists and engineers appointed by the President evaluates the nominees.



Dead Whales Tell No Tales, Except to Oceanographers

A dead whale speaks volumes to undersea researchers such as Craig Smith, a biological oceanographer at the University of Hawaii.

Smith, whose work is funded in part by the National Undersea Research Program and its West Coast and Polar Regions Center at the University of Alaska Fairbanks, has been observing what happens to whale carcasses at the bottom of the sea, or whale falls. What he and his colleagues have found is that dead whales may provide a lot of life.

Smith and other individuals have found that whale bones, along with sunken wood, could be a missing link in the introduction of new species near deep-sea vents, which can reach extremely high temperatures and spew a chemical soup that many organisms find intolerable.

"We are able to observe the three stages of ecological succession, or community change, that the falls pass through," Smith said. "The first attracts scavengers, such as crabs, sharks, and fish that strip most of the soft tissue from the carcass in as little as four months."

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If We Can Sea Grant Here, We Can Sea Grant Anywhere

What does a landlocked state have in common with Sea Grant? Well, plenty, as it turns out. That was the feeling of those attending the first meeting between Sea Grant and OAR labs to find better ways the two programs can work together.

OAR's National Severe Storms Laboratory (NSSL) in Norman, OK, hosted a delegation of Sea Grant and OAR staff in February. The idea was that if Sea Grant, which deals with ocean and coastal issues, could find some areas in which to work with a state without a coastline, then everything else would be a snap.

NSSL Director Jeff Kimpel was enthusiastic about hosting the meeting at his lab. "Although we don't have a coastline, we do have plenty of issues that we can work on with Sea Grant, such as weather safety," Kimpel said.

Some of NSSL's outreach efforts include free advertisements on the sides of U-Haul trucks, consultation work with the producers and stars of the movie "Twister," and the Universal Studios Florida Theme Park attraction based on the movie.

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Why Do We Need Science Education?

A child who often asks "why" is probably a good candidate to be a scientist. Many parents will immediately say, "My child started asking 'why' when he or she was about three and I wondered when it would stop." While it may be music to a parent's ears when "why" is no longer constantly asked, it also may signal natural curiosity being dulled by ignorance. Learning of every kind should encourage "why," but science education should do so especially because the sharp edge of curiosity is critical to any progress. Many of our finest scientists, when asked how they came across a solution to a problem, say, "Well, I just wanted to know why this happened."



One would think that the United States, long the leader in many areas, would also be near the top in science education. Not so. An essay published in the journal *Science* notes that "As a whole, American youth are not learning science well." The essay adds that "A quality science education will ensure that the public develops an appreciation for science that will spawn their support for future research and innovation."

NOAA Research depends on that appreciation to support the quality work that we do. If the public no longer understands why we are taking measurements of the air and ocean to predict the next El Niño, why scientists are flying into the eyes of hurricanes to see how they tick, or why researchers are so excited about finding creatures that can live at extreme temperatures in the oceans, then I worry about our future as an organization and as a society.

Physicist Stephen Hawking, speaking to California high school and college students earlier this year, told them "there is no way to stop scientific and technological progress. So it's imperative that people gain a better understanding of science in order to make informed decisions about developments that affect their lives."

Never before has society depended so greatly on science. Never before has the need for a scientifically savvy populace been so great. However, I fear that the separation between those who are scientifically literate and those who are not is growing. We must guard against letting the Luddites gain the upper hand.

On April 7, I spoke to teachers at the National Science Teachers Association annual meeting in Florida. These are the people whom we hope will inspire our children to appreciate and embrace science. To science teachers, a child asking "why" strikes a musical chord. It was wonderful to hear a symphony of questions starting with "why" from some of the teachers in the audience: Once you start fiddling with "why" it's hard to stop.

David H. Evans



CILER's Work Is Always Fresh (Water)

The Cooperative Institute for Limnology and Ecosystems Research (CILER) is the only NOAA Research Joint Institute with direct responsibilities for research in fresh water. It could not be in a better location than Michigan, therefore, the only state with coastline along four of the five Great Lakes.

Established in 1989, CILER is a joint endeavor of the University of Michigan, Michigan State University, and the Great Lakes Environmental Research Laboratory (GLERL).

CILER's work is not limited to the limnetic - or fresh water - environment, as it also supports research in estuarine and coastal marine environments. The research is focused on five broad themes: climate and large-lake dynamics; coastal and nearshore processes; large-lake ecosystem structure and function; remote sensing of large lake and coastal ocean dynamics; and marine environmental engineering.

One of the projects funded through CILER is the Episodic Events - Great Lakes Experiment (EEGLE), which brings researchers from CILER, GLERL, and other institutions around the US and Canada together to develop sediment models to better understand the impact of the transport and transformation of such materials and their affect on Great Lakes ecology. For EEGLE details, visit: www.glerl.noaa.gov/eeagle.

CILER has more than 70 Fellows who represent almost every phase of limnological and coastal oceanographic research. The staff is comprised of research scientists, visiting research scientists, postdoctoral research fellows, research assistants, graduate student research assistants, temporary research staff, undergraduate student assistants, summer high school interns, and summer undergraduate/graduate fellows.



The new homepage for NOAA Research debuted April, 2000. Check it out at: www.oar.noaa.gov

Live from the Storm,
Part 2
"Research to the Rescue"
April 11 and 18, PBS

The Gold/Silver Medal nominations are due to OAR Headquarters (Betty Hess)
April 14

Earth Day - April 22

"Bring a Child to Work"
Day
April 27

From Their Campus to Ours: PA Students Visit NOAA

The skies were cloudy, but that seemed appropriate for the visit of Climatology students from Pennsylvania to NOAA's Silver Spring campus in March.

During their visit, the students and faculty from Shippensburg University heard a presentation from NOAA Library staff and met with representatives from the National Weather Service.

Assistant Professor Diane Stanitski-Martin, who teaches an undergraduate Climatology class and a graduate Environment class, requested the visit, which was coordinated by Dr. John Kermond of the Office of Global Programs and Joyce Gross from the Office of Public & Constituent Affairs.

A return visit next year is planned which will include the NEXRAD site in Sterling, VA.

OAR People

The recipients of OAR's 1999 outstanding paper awards in alphabetical (first author) order are:

Research

•Butler, J.H., S.A. Montzka, A.D. Clarke, J.M. Lobert, and J.W. Elkins, Growth and distribution of halons in the atmosphere, *Journal of Geophysical Research*.

•Gaffen, D.J. and R.J. Ross, Climatology and trends of U.S. surface humidity and temperature, *Journal of Climate*.

•Griffies, S.M., A. Gnanadesikan, R.C. Pacanowski, V.D. Larichev, J.K. Dukowicz, and R.D. Smith, Isoneutral diffusion in a z-coordinate ocean model, *Journal of Physical Oceanography*.

•Hofmann, D.J., S.J. Oltmans, J.M. Harris, B.J. Johnson, and J.A. Lathrop, Ten years of ozonesonde measurements at the South Pole: Implications for recovery of springtime Antarctic ozone, *Journal of Geophysical Research*.

•Huey, L.G., E.J. Dunlea, E.R. Lovejoy, D.R. Hanson, R.B. Norton, F.C. Fehsenfeld, and C.J. Howard, Fast time response measurements of HNO_3 in air with a chemical ionization mass spectrometer, *Journal of Geophysical Research*.

•Murphy, D.M., D.S. Thomson, and M.J. Mahoney, In situ measurements of organics, meteoritic material, mercury, and other elements in aerosols at 5 to 19 kilometers, *Science*.

•Peng, T.H., R. Wanninkhof, J.L. Bullister, R.A. Feeley, and T. Takahashi, Quantification of decadal anthropogenic CO_2 uptake in the ocean based on dissolved inorganic carbon measurements, *Nature*.

•Ryerson, T.B., M.P. Buhr, G.J. Frost, P.D. Goldan, J.S. Holloway, G. Hübler, B.T. Jobson, W.C. Kuster, S.A. McKeen, D.D. Parrish, J.M. Robers, D.T. Sueper, M. Trainer, J. Williams, and F.C. Fehsenfeld, Emissions lifetimes and ozone formation in power plant plumes, *Journal of Geophysical Research*.

•Stensrud, D.J., J.V. Cortinas Jr., and H.E. Brooks, Discriminating between tornadic and nontornadic thunderstorms using mesoscale model output, *Weather and Forecasting*.

•Trapp, R.J. and R. Davies-Jones, Tornadogenesis with and without a dynamic pipe effect, *Journal of Atmospheric Sciences*.

Review

•MacGorman, D.R. and W.D. Rust, *The Electrical Nature of Storms*, Oxford University Press.

•McPhaden, M.J., A.J. Busalacchi, R. Cheney, J.R. Donguy, K.S. Gage, D. Halpern, M. Ji, P. Julian, G. Meyers, G.T. Mitchum, P.P. Niiler, J. Picaut, R.W. Reynolds, N. Smith, and K. Takeuchi: The Tropical Ocean-Global Atmosphere observing system: A decade of progress, *Journal of Geophysical Research*.

Samples Correction: Francis A. Schiermeier is a recipient of the 1999 Department of Commerce Administrator Award.

H E R U T L U C I R A M
U W C H E M I S T R Y O
R F L O A T S H O E E D
R R I E C S C I Z S E E
I N M R W I N D O E C L
C E A C O T S U N A M I
A A T M O S P H E R E D
N A E C O V M E I C E A
E N I L A S E S T H N R
W E A T H E R N O L S I
F R E E D U C A T I O N

Cross out all of the words in the word search. Once all of the words have been found and crossed off, the remaining letters can be read in order to form the final answer, a 5-word phrase that defines NOAA Research. NOTE: The words can be found in any direction.

ARCTIC
ATMOSPHERE
CHEMISTRY
CLIMATE
EDUCATION
ENSO
FLOATS

HURRICANE
ICE
LIDAR
MARICULTURE
MODEL
OCEAN
OZONE

RESEARCH
SALINE
SOLAR
TSUNAMI
VENT
WEATHER
WIND

Submit your **final answer** to samplespuzzle@hq.oar.noaa.gov by April 30. The winner will be randomly chosen from all correct answers received and will receive a NOAA mug. *Congratulations to Jerry Crescenti of ARL's FRD in Idaho Falls, ID. Jerry was the winner of the Winter 1999 puzzle.*

President Requests \$303 Million for NOAA Research in FY 2001 Budget

On February 7, President Clinton released his budget request for FY 2001, which starts on October 1, 2000. The NOAA request included \$302.5 million in the Oceanic and Atmospheric Research (OAR) budget activity and research related requests in the Procurement, Acquisition and Construction (PAC) and Facilities accounts of \$19.4 million.

Some highlights of the request include funding of \$28 million for a Climate Observations and Services program; increases in the U.S. Weather Research, Mariculture, Fisheries Oceanography, GLOBE, and Aquatic Nuisance Species programs as well as a new Sea Floor Observatories program.

Also requested is second year funding of \$7 million for the GFDL computer; \$3 million for planning a joint NOAA/University of Oklahoma facility in Norman, OK, and funds to support the operation of the new David Skaggs Research Center in Boulder, CO. The request for the Sea Grant Program is at \$59.25 million, the highest level ever requested in the President's budget and \$.625 million above the final enacted FY 2000 budget.

Also included in the budget are reductions for the National Undersea Research Program and 11 programs funded in the FY 2000 appropriation but not requested by the President.

Dave Evans and other NOAA Research scientists are briefing Hill staff, university communities and key constituents on the need for this funding. Decisions are expected from both the House and the Senate appropriations committees in May/June with final action in September or October. More detail on the budget request, including one page descriptions of each of the increases can be found under the organization link on the OAR web page:
<http://www.oar.noaa.gov>

(continued from page 1) NURP

During the second stage, furry worms and shrimp-like cumaceans take over. This lasts for about a year, while the creatures consume the small particles of whale tissue that have been dispersed by scavengers over the nearby seafloor. The final stage is the longest, lasting years to decades. As the whale bones decay, they produce sulfide, which seems to support a rich variety of life, including tubeworms, mussels, and several species of clams. The researchers have found more than 30,000 animals totaling more than 200 species on a single skeleton, making whale falls one of the most species-rich "rocky" habitats in the deep sea.

The most recent research indicates that the animals found at the whale falls are closely related to those found at hydrothermal vents and cold seeps. DNA analyses of one type of mussel, the *Idas washingtonia*, found in abundance at whale falls, indicates that this species belongs to a subfamily of mussels previously thought to be restricted to hydrothermal vents and cold seeps, said Smith. Earlier work by Smith and others revealed that some of the sulfide-loving clams found on whale falls are in fact the same species as found at some vents and seeps.

(continued from page 1) Sea Grant

NSSL was able to teach tornado and severe weather safety at more than 25 children's museums across the eastern seaboard using the Twister attraction. The first ever announcement of "Severe Storm Season" took place on March 2 to focus attention on and increase awareness about severe storms.

Sea Grant is well known and respected for its communication, outreach, and extension programs.

"We need to better coordinate OAR's outreach efforts with Sea Grant programs," said Mary Anne Whitcomb, Director of OAR's Budget and External Affairs Division.

Those participating in the Norman visit pronounced it a success. It brought together representatives of communications, education, and extension/outreach from the Sea Grant Network and NSSL, as well as CIMMS (the Joint Institute associated with NSSL), the Oklahoma Climate Survey, and Sea Grant's Extension Disaster Education Network (EDEN) of cooperative extension services.

"We want to keep the newly created lines of communication open," said Lundie Spence from North Carolina Sea Grant, one of the participants in the meeting. "And we want to explore (other) innovative ways to maintain the connections and share talent. We can exchange ideas through newsletters and conferences, but the key is to develop joint programs, such as putting each other on newsletter mailing lists, and involving each other in relevant conferences."

The next steps identified as follow up from this meeting include ensuring that all NSSL meeting participants are on the *Samples* distribution list; starting work towards developing a proposal for a Dual Polar Radar demonstration project with North and South Carolina Sea Grant, exploring holding the next EDEN network meeting at NSSL, putting a discussion of the NSSL meeting on the agenda for the Sea Grant Extension Program (SGEP) leaders meeting in Alaska, and giving exposure to NSSL at the Sea Grant week in Hilton Head in March, 2001.

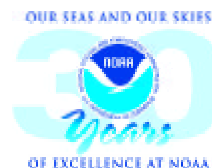
Congratulations to the following four NOAA Research employees who have achieved 30 years of federal service since January 1, 2000:

William Stern, GFDL

Jim McVey, Sea Grant

Tony Tafoya, OMI

Warren Keenan, OGP



Send Us a Sample

Let us know what you think about this newsletter. What's missing? What do you like? What don't you like. Send comments to Jana Goldman or Karen Tolson.
janag@hq.oar.noaa.gov or karent@hq.oar.noaa.gov